

**Notice of Allowability**

Application No.

09/927,422

Applicant(s)

NEST ET AL.

Examiner

Art Unit

N. M. Minnifield

1645

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/706; 3/8/07.
2. ☒ The allowed claim(s) is/are 1, 4-17, 19-23, 48, 51-64, 66-74, 76-84; now renumbered 1-53 respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 11-26-01; 3-21-02; 9-7-06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 3-8-07
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Debra J. Glaister, 33888 on March 8, 2007.

2. The After final amendment filed September 7, 2006 is acknowledged and has been entered. All rejections have been withdrawn in view of the amendments (9/7/06 and see below) as well as arguments set forth in the after final amendment.

3. The application has been amended as follows:

Claim 1 (currently amended): An immunomodulatory polynucleotide/microcarrier (IMP/MC) complex, comprising:

a polynucleotide covalently linked to the surface of a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3', wherein the polynucleotide is greater than 6 and less than about 200 nucleotides in length and wherein said MC is less than 10  $\mu\text{m}$  in size.

Claims 2-3 (canceled).

Claim 4 (original): The IMP/MC complex of claim 1, wherein said microcarrier is a liquid phase microcarrier.

Claim 5 (original): The IMP/MC complex of claim 1, wherein said microcarrier is a solid phase microcarrier.

Claim 6 (original): The IMP/MC complex of claim 1, wherein said microcarrier is from 25 nm to 5  $\mu$ m in size.

Claim 7 (original): The IMP/MC complex of claim 6, wherein said microcarrier is from 1.0  $\mu$ m to 2.0  $\mu$ m in size.

Claim 8 (original): The IMP/MC complex of claim 7, wherein said microcarrier is 1.4  $\mu$ m in size.

Claim 9 (original): The IMP/MC complex of claim 1, wherein said microcarrier is cationic.

Claim 10 (original): The IMP/MC complex of claim 1, wherein said complex is antigen-free.

Claim 11 (original): The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 12 (original): The IMP/MC complex of claim 11, wherein said polynucleotide comprises the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 13 (previously presented): The IMP/MC complex of claim 12, wherein said polynucleotide comprises the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 14 (original): The IMP/MC complex of claim 12, wherein said polynucleotide comprises a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 15 (original): The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 16 (original): The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 17 (original): The IMP/MC complex of claim 11, wherein said polynucleotide comprises the sequence SEQ ID NO:1.

Claim 18 (canceled).

Claim 19 (currently amended): The IMP/MC complex of any of claims 1, 11, 12, 13, or 14, [or 18,] wherein said polynucleotide is 7 nucleotides in length.

Claim 20 (currently amended): The IMP/MC complex of any of claims 1, 11, 12, 13, or 14, [or 18,] wherein said complex further comprises an antigen.

Claim 21 (original): The IMP/MC complex of claim 20, wherein said antigen is an allergen.

Claim 22 (original): The IMP/MC complex of claim 1, wherein said polynucleotide comprises a phosphate backbone modification.

Claim 23 (original): The IMP/MC complex of claim 22, wherein said phosphate backbone modification is a phosphorothioate.

Claims 24-47 (canceled).

Claim 48 (currently amended): A kit, comprising:

an immunomodulatory polynucleotide/microcarrier (IMP/MC) complex, said complex comprising a polynucleotide covalently linked the surface of to a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3', wherein the polynucleotide is greater than 6 and less than about 200 nucleotides in length and wherein said MC is less than 10  $\mu\text{m}$  in size; and instructions for use of the IMP/MC complex in immunomodulation of an individual.

Claims 49-50 (canceled).

Claim 51 (original): The kit of claim 48, wherein said microcarrier is a liquid phase microcarrier.

Claim 52 (original): The kit of claim 48, wherein said microcarrier is a solid phase microcarrier.

Claim 53 (original): The kit of claim 48, wherein said microcarrier is from 25 nm to 5  $\mu$ m in size.

Claim 54 (original): The kit of claim 53, wherein said microcarrier is from 1.0  $\mu$ m to 2.0  $\mu$ m in size.

Claim 55 (original): The kit of claim 54, wherein said microcarrier is 1.4  $\mu$ m in size.

Claim 56 (original): The kit of claim 48, wherein said microcarrier is cationic.

Claim 57 (original): The kit of claim 48, wherein said complex is antigen-free.

Claim 58 (original): The kit of claim 48, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 59 (original): The kit of claim 58, wherein said polynucleotide comprises the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 60 (previously presented): The kit of claim 59, wherein said polynucleotide comprises the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 61 (original): The kit of claim 59, wherein said polynucleotide comprises a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 62 (original): The kit of claim 48, wherein the polynucleotide comprises the sequence 5'-C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 63 (original): The kit of claim 48, wherein the polynucleotide comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 64 (original): The kit of claim 58, wherein the polynucleotide comprises the sequence SEQ ID NO:1.

Claim 65 (canceled).

Claim 66 (currently amended): The kit of any of claims 48, 58, 59, 60, or 61, [or 65,] wherein said kit further comprises an antigen.

Claim 67 (original): The kit of claim 66, wherein said antigen is an allergen.

Claim 68 (original): The kit of claim 48, wherein said polynucleotide comprises a phosphate backbone modification.

Claim 69 (original): The kit of claim 68, wherein said phosphate backbone modification is a phosphorothioate.

Claim 70 (previously presented): A kit, comprising:

an immunomodulatory polynucleotide/microcarrier (IMP/MC) complex, said complex comprising a polynucleotide covalently linked to the surface of a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3' and wherein said polynucleotide is 7 nucleotides in length; and instructions for use of the IMP/MC complex in immunomodulation of an individual.

Claim 71 (original): The kit of claim 70, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 72 (original): The kit of claim 71, wherein said polynucleotide consists of the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 73 (previously presented): The kit of claim 72, wherein said polynucleotide consists of the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 74 (original): The kit of claim 72, wherein said polynucleotide consists of a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 75 (canceled).

Claim 76 (original): The kit of claim 70, wherein said complex is antigen-free.

Claim 77 (original): The kit of claim 70, further comprising an antigen.



Claim 78 (original): The kit of claim 77, wherein said antigen is an allergen.

Claim 79 (original): The kit of claim 70, wherein said polynucleotide comprises a phosphate backbone modification.

Claim 80 (original): The kit of claim 79, wherein said phosphate backbone modification is a phosphorothioate.

Claim 81 (original): A composition comprising an IMP/MC complex of claim 1 and a pharmaceutically acceptable excipient.

Claim 82 (original): A composition according to claim 81, wherein the composition is antigen-free.

Claim 83 (original): A composition according to claim 81, wherein the composition further comprises an antigen.

Claim 84 (original): A composition according to claim 83, wherein the antigen is an allergen.

4. Claims 1, 4-17, 19-23, 48, 51-64, 66-74 and 76-84 have been allowed and renumbered 1-53 respectively.

5. The following is an examiner's statement of reasons for allowance: The closest prior art (Schwartz et al WO 98/55495) does not teach or suggest the all of the claimed invention, an IMP/MC comprising a polynucleotide covalently linked

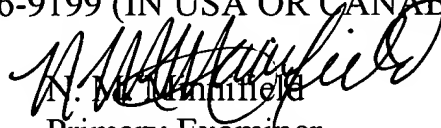
to the surface of a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3', wherein the polynucleotide is greater than 6 and less than about 200 nucleotides in length and wherein said MC is less than 10  $\mu$ m in size. The prior art teaches microcarrier encapsulation of the oligonucleotide rather than the oligonucleotide being linked to the surface of the microcarrier.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. M. Minnifield whose telephone number is 571-272-0860. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Siew can be reached on 571-272-0787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
N. M. Minnifield  
Primary Examiner  
Art Unit 1645

NMM  
March 8, 2007

**CLEAN COPY OF ALLOWED CLAIMS**

Claim 1     An immunomodulatory polynucleotide/ microcarrier (IMP/MC) complex, comprising:

        a polynucleotide covalently linked to the surface of a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3', wherein the polynucleotide is greater than 6 and less than about 200 nucleotides in length and wherein said MC is less than 10  $\mu\text{m}$  in size.

Claim 4     The IMP/MC complex of claim 1, wherein said microcarrier is a liquid phase microcarrier.

Claim 5     The IMP/MC complex of claim 1, wherein said microcarrier is a solid phase microcarrier.

Claim 6     The IMP/MC complex of claim 1, wherein said microcarrier is from 25 nm to 5  $\mu\text{m}$  in size.

Claim 7     The IMP/MC complex of claim 6, wherein said microcarrier is from 1.0  $\mu\text{m}$  to 2.0  $\mu\text{m}$  in size.

Claim 8     The IMP/MC complex of claim 7, wherein said microcarrier is 1.4  $\mu\text{m}$  in size.

Claim 9 The IMP/MC complex of claim 1, wherein said microcarrier is cationic.

Claim 10 The IMP/MC complex of claim 1, wherein said complex is antigen-free.

Claim 11 The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 12 The IMP/MC complex of claim 11, wherein said polynucleotide comprises the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 13 The IMP/MC complex of claim 12, wherein said polynucleotide comprises the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 14 The IMP/MC complex of claim 12, wherein said polynucleotide comprises a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 15 The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 16 The IMP/MC complex of claim 1, wherein said polynucleotide comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 17 The IMP/MC complex of claim 11, wherein said polynucleotide comprises the sequence SEQ ID NO:1.

Claim 19 The IMP/MC complex of any of claims 1, 11, 12, 13, or 14, wherein said polynucleotide is 7 nucleotides in length.

Claim 20 The IMP/MC complex of any of claims 1, 11, 12, 13, or 14, wherein said complex further comprises an antigen.

Claim 21 The IMP/MC complex of claim 20, wherein said antigen is an allergen.

Claim 22 The IMP/MC complex of claim 1, wherein said polynucleotide comprises a phosphate backbone modification.

Claim 23 The IMP/MC complex of claim 22, wherein said phosphate backbone modification is a phosphorothioate.

Claim 48 A kit, comprising:

an immunomodulatory polynucleotide/microcarrier (IMP/MC) complex, said complex comprising a polynucleotide covalently linked the surface of to a biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3', wherein the polynucleotide is greater than 6 and less than about 200 nucleotides in length and wherein said MC is less than 10  $\mu$ m in size; and instructions for use of the IMP/MC complex in immunomodulation of an individual.

Claim 51 The kit of claim 48, wherein said microcarrier is a liquid phase microcarrier.

Claim 52 The kit of claim 48, wherein said microcarrier is a solid phase microcarrier.

Claim 53 The kit of claim 48, wherein said microcarrier is from 25 nm to 5  $\mu\text{m}$  in size.

Claim 54 The kit of claim 53, wherein said microcarrier is from 1.0  $\mu\text{m}$  to 2.0  $\mu\text{m}$  in size.

Claim 55 The kit of claim 54, wherein said microcarrier is 1.4  $\mu\text{m}$  in size.

Claim 56 The kit of claim 48, wherein said microcarrier is cationic.

Claim 57 The kit of claim 48, wherein said complex is antigen-free.

Claim 58 The kit of claim 48, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 59 The kit of claim 58, wherein said polynucleotide comprises the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 60 The kit of claim 59, wherein said polynucleotide comprises the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 61 The kit of claim 59, wherein said polynucleotide comprises a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 62 The kit of claim 48, wherein the polynucleotide comprises the sequence 5'-C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 63 The kit of claim 48, wherein the polynucleotide comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, G-3'.

Claim 64 The kit of claim 58, wherein the polynucleotide comprises the sequence SEQ ID NO:1.

Claim 66 The kit of any of claims 48, 58, 59, 60, or 61, wherein said kit further comprises an antigen.

Claim 67 The kit of claim 66, wherein said antigen is an allergen.

Claim 68 The kit of claim 48, wherein said polynucleotide comprises a phosphate backbone modification.

Claim 69 The kit of claim 68, wherein said phosphate backbone modification is a phosphorothioate.

Claim 70 A kit, comprising:  
an immunomodulatory polynucleotide/microcarrier (IMP/MC) complex,  
said complex comprising a polynucleotide covalently linked to the surface of a

biodegradable microcarrier (MC), wherein said polynucleotide comprises the sequence 5'-CG-3' and wherein said polynucleotide is 7 nucleotides in length; and instructions for use of the IMP/MC complex in immunomodulation of an individual.

Claim 71 The kit of claim 70, wherein said polynucleotide comprises the sequence 5'-T, C, G-3'.

Claim 72 The kit of claim 71, wherein said polynucleotide consists of the sequence 5'-TCGX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3' or the sequence 5'-X<sub>1</sub>TCGX<sub>2</sub>X<sub>3</sub>X<sub>4</sub>-3', wherein X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> are nucleotides.

Claim 73 The kit of claim 72, wherein said polynucleotide consists of the sequence 5'-TCGTCGX<sub>4</sub>-3'.

Claim 74 The kit of claim 72, wherein said polynucleotide consists of a sequence selected from the group consisting of 5'-TCGTCGA-3', 5'-TCGAAAA-3', 5'-TCGCCCC-3', 5'-TCGGGGG-3' and 5'-TCGTTTT-3'.

Claim 76 The kit of claim 70, wherein said complex is antigen-free.

Claim 77 The kit of claim 70, further comprising an antigen.

Claim 78 The kit of claim 77, wherein said antigen is an allergen.

Claim 79 The kit of claim 70, wherein said polynucleotide comprises a phosphate backbone modification.



Claim 80    The kit of claim 79, wherein said phosphate backbone modification is a phosphorothioate.

Claim 81    A composition comprising an IMP/MC complex of claim 1 and a pharmaceutically acceptable excipient.

Claim 82    A composition according to claim 81, wherein the composition is antigen-free.

Claim 83    A composition according to claim 81, wherein the composition further comprises an antigen.

Claim 84    A composition according to claim 83, wherein the antigen is an allergen.